

What is claimed is:

1. A method of transmitting a bit stream in a communication network, the method comprising:

(a) coding source data into the bit stream using a predetermined type of coding;

5 (b) adding a header from each communication protocol layer to a payload while transmitting the bit stream coded in the step (a) to each communication protocol layer; and

(c) transmitting the header separately from the bit stream transmitted in the step (b).

2. A method of transmitting a bit stream in a communication network, the method comprising:

(a) coding source data into the bit stream using a predetermined type of coding;

5 (b) adding a header from each communication protocol layer to a payload while transmitting the bit stream coded in the step (a) to each communication protocol layer; and

(c) separately transmitting the payload and the header.

3. The method of claim 1, wherein in the step (c), a bit stream, to which headers have been added by undergoing each communication protocol layer, is transmitted in an unacknowledged

mode protocol, and only the header information in the bit stream is
5 separately transmitted in an acknowledged or unacknowledged mode
protocol.

4. The method of claim 2, wherein in the step (c), a payload
in a bit stream, which has passed through each communication
protocol layer, is transmitted in an unacknowledged mode protocol, and
the header information is separately transmitted in an acknowledged
5 mode protocol.

5. The method of claim 3, wherein, when the number of
times of re-transmission of a bit stream transmitted in an acknowledged
mode protocol is equal to or less than a predetermined number of
times, the bit stream, which has been transmitted in an
5 unacknowledged mode protocol, is transmitted in an acknowledged
mode protocol.

6. The method of claim 4, wherein, when the number of
times of re-transmission of a bit stream transmitted in an acknowledged
mode protocol is equal to or less than a predetermined number of
times, the bit stream, which has been transmitted in an
5 unacknowledged mode protocol, is transmitted in an acknowledged
mode protocol.

7. The method of claim 3, wherein the header information in the bit stream is simultaneously transmitted in an acknowledged mode protocol with the bit stream.

8. The method of claim 4, wherein the header information in the bit stream is simultaneously transmitted in an acknowledged mode protocol with the payload.

9. The method of claim 3, wherein the header information in the bit stream is simultaneously transmitted in the unacknowledged mode protocol with the bit stream.

10. The method of claim 3, wherein, when a transmission error occurs, the bit stream, to which headers have been added by undergoing each communication protocol layer, is re-transmitted in an acknowledged or unacknowledged mode protocol.

11. The method of claim 3, wherein the acknowledged mode protocol is a transmission control protocol (TCP), and the unacknowledged mode protocol is a user datagram protocol (UDP).

12. The method of claim 4, wherein the acknowledged mode protocol is a transmission control protocol (TCP), and the unacknowledged mode protocol is a user datagram protocol (UDP).

13. The method of claim 5, wherein the acknowledged mode protocol is a transmission control protocol (TCP), and the unacknowledged mode protocol is a user datagram protocol (UDP).

14. The method of claim 6, wherein the acknowledged mode protocol is a transmission control protocol (TCP), and the unacknowledged mode protocol is a user datagram protocol (UDP).

15. The method of claim 7, wherein the acknowledged mode protocol is a transmission control protocol (TCP), and the unacknowledged mode protocol is a user datagram protocol (UDP).

16. The method of claim 8, wherein the acknowledged mode protocol is a transmission control protocol (TCP), and the unacknowledged mode protocol is a user datagram protocol (UDP).

17. The method of claim 3, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link protocol (RLP) packets.

18. The method of claim 4, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link protocol (RLP) packets.

19. The method of claim 5, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link protocol (RLP) packets.

20. The method of claim 6, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link protocol (RLP) packets.

21. The method of claim 7, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link protocol (RLP) packets.

22. The method of claim 8, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link protocol (RLP) packets.

23. The method of claim 9, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link layer protocol (RLP) packets.

24. The method of claim 10, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link protocol (RLP) packets.

25. The method of claim 1, wherein the headers are a payload header, a real time protocol (RTP) header, a user datagram

protocol (UDP) or transmission control protocol (TCP) header, an Internet protocol (IP) header, a radio link protocol (RLP) header, and a
5 layer 2 (L2) header, which are added after a bit stream is passed through each layer.

26. The method of claim 2, wherein the headers are a payload header, a real time protocol (RTP) header, a user datagram protocol (UDP) or transmission control protocol (TCP) header, an Internet protocol (IP) header, a radio link protocol (RLP) header, and a
5 layer 2 (L2) header, which are added after a bit stream is passed through each layer.

27. The method of claim 1, wherein the payload includes multimedia data.

28. The method of claim 2, wherein the payload includes multimedia data.

~~29.~~ An apparatus for transmitting a bit stream in a communication network, the apparatus comprising:

an encoder for encoding source data into a bit stream using a predetermined type of coding;

5 a protocol processing unit for adding the header of each communication protocol layer to a payload while transmitting the bit

stream encoded by the encoder to each communication protocol layer;
and

10 a packet processing unit for transmitting the bit stream
processed by the protocol processing unit in an unacknowledged mode
protocol and transmitting the header information in an unacknowledged
or acknowledged mode protocol.

~~30.~~ An apparatus for relaying and receiving a bit stream in a
communication network, the apparatus comprising:

an extractor for separately extracting payloads and header
information, which corresponds to the header of each layer, while
5 transmitting a bit stream received in a separate transmission protocol in
the communication network to each layer;

an error determination processing unit for determining whether
the header information extracted by the extractor has error;

a bit stream re-organizing unit for re-organizing a bit stream
10 using the header information extracted by the extractor; and

a decoder for decoding a bit stream re-organized by the bit
stream re-organizing unit.

31. The apparatus for relaying and receiving a bit stream in a
communication network of claim 30, wherein the error determination
processing unit also requests re-transmission if it is determined that the
header information has error.

~~32.~~ A computer-readable recording medium in which a computer program for performing a method of transmitting a bit stream in a communication network is stored, the computer program comprising instructions for performing a method of transmitting a bit stream in a communication network including the steps of:

(a) coding source data into the bit stream using a predetermined type of coding;

(b) adding a header from each communication protocol layer to a payload while transmitting the bit stream coded in the step (a) to each communication protocol layer; and

(c) transmitting the header separately from the bit stream transmitted in the step (b).

~~33.~~ A computer-readable recording medium in which a computer program for performing a method of transmitting a bit stream in a communication network is stored, the computer program comprising instructions for performing a method of transmitting a bit stream in a communication network including the steps of:

(a) coding source data into the bit stream using a predetermined type of coding;

(b) adding a header from each communication protocol layer to a payload while transmitting the bit stream coded in the step (a) to each communication protocol layer; and

(c) separately transmitting the payload and the header.

34. The computer-readable recording medium of claim 32, wherein in the step (c), a bit stream, to which headers have been added by undergoing each communication protocol layer, is transmitted in an unacknowledged mode protocol, and only the header
5 information in the bit stream is separately transmitted in an acknowledged or unacknowledged mode protocol.

35. The computer-readable recording medium of claim 33, wherein in the step (c), a payload in a bit stream, which has passed through each communication protocol layer, is transmitted in an unacknowledged mode protocol, and the header information is
5 separately transmitted in an acknowledged mode protocol.

36. The computer-readable recording medium of claim 34, wherein, when the number of times of re-transmission of a bit stream transmitted in an acknowledged mode protocol is equal to or less than a predetermined number of times, the bit stream, which has been
5 transmitted in an unacknowledged mode protocol, is transmitted in an acknowledged mode protocol.

37. The computer-readable recording medium of claim 35, wherein, when the number of times of re-transmission of a bit stream transmitted in an acknowledged mode protocol is equal to or less than

a predetermined number of times, the bit stream, which has been
5 transmitted in an unacknowledged mode protocol, is transmitted in an
acknowledged mode protocol.

38. The computer-readable recording medium of claim 34,
wherein the header information in the bit stream is simultaneously
transmitted in an acknowledged mode protocol with the bit stream.

39. The computer-readable recording medium of claim 35,
wherein the header information in the bit stream is simultaneously
transmitted in an acknowledged mode protocol with the payload.

40. The computer-readable recording medium of claim 34,
wherein the header information in the bit stream is simultaneously
transmitted in the unacknowledged mode protocol with the bit stream.

41. The computer-readable recording medium of claim 34,
wherein, when a transmission error occurs, the bit stream, to which
headers have been added by undergoing each communication protocol
layer, is re-transmitted in an acknowledged or unacknowledged mode
5 protocol.

42. The computer-readable recording medium of claim 34,
wherein the acknowledged mode protocol is a transmission control

protocol (TCP), and the unacknowledged mode protocol is a user datagram protocol (UDP).

43. The computer-readable recording medium of claim 35, wherein the acknowledged mode protocol is a transmission control protocol (TCP), and the unacknowledged mode protocol is a user datagram protocol (UDP).

44. The computer-readable recording medium of claim 36, wherein the acknowledged mode protocol is a transmission control protocol (TCP), and the unacknowledged mode protocol is a user datagram protocol (UDP).

45. The computer-readable recording medium of claim 37, wherein the acknowledged mode protocol is a transmission control protocol (TCP), and the unacknowledged mode protocol is a user datagram protocol (UDP).

46. The computer-readable recording medium of claim 38, wherein the acknowledged mode protocol is a transmission control protocol (TCP), and the unacknowledged mode protocol is a user datagram protocol (UDP).

47. The computer-readable recording medium of claim 39, wherein the acknowledged mode protocol is a transmission control

protocol (TCP), and the unacknowledged mode protocol is a user datagram protocol (UDP).

48. The computer readable recording medium of claim 34, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link protocol (RLP) packets.

49. The computer-readable recording medium of claim 35, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link protocol (RLP) packets.

50. The computer-readable recording medium of claim 36, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link protocol (RLP) packets.

51. The computer-readable recording medium of claim 37, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link protocol (RLP) packets.

52. The computer-readable recording medium of claim 38, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link protocol (RLP) packets.

53. The computer-readable recording medium of claim 39, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link protocol (RLP) packets.

54. The computer-readable recording medium of claim 40, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link protocol (RLP) packets.

55. The computer-readable recording medium of claim 41, wherein the acknowledged mode protocol re-transmits Internet protocol (IP) packets or radio link layer protocol (RLP) packets.

56. The computer-readable recording medium of claim 32, wherein the headers are a payload header, a real time protocol (RTP) header, a user datagram protocol (UDP) or transmission control protocol (TCP) header, an Internet protocol (IP) header, a radio link protocol (RLP) header, and a layer 2 (L2) header, which are added
5 after a bit stream is passed through each layer.

57. The computer-readable recording medium of claim 33, wherein the headers are a payload header, a real time protocol (RTP) header, a user datagram protocol (UDP) or transmission control protocol (TCP) header, an Internet protocol (IP) header, a radio link
5 protocol (RLP) header, and a layer 2 (L2) header, which are added after a bit stream is passed through each layer.

58. The computer-readable recording medium of claim 32, wherein the payload includes multimedia data.

